

**EMF·EMT·EMTR·EMX Series**  
*STEREO MICROSCOPES*



**INSTRUCTION  
MANUAL**

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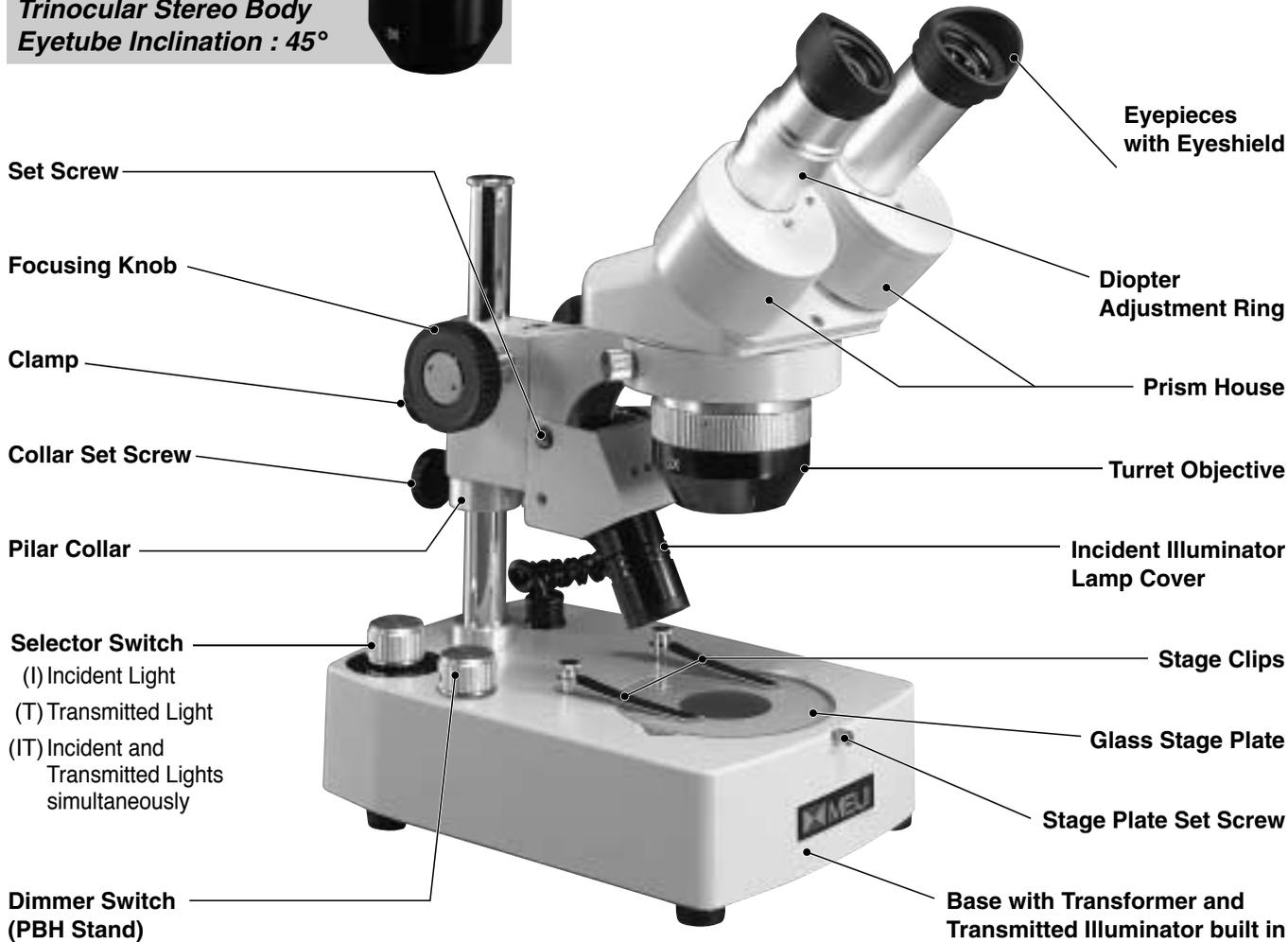
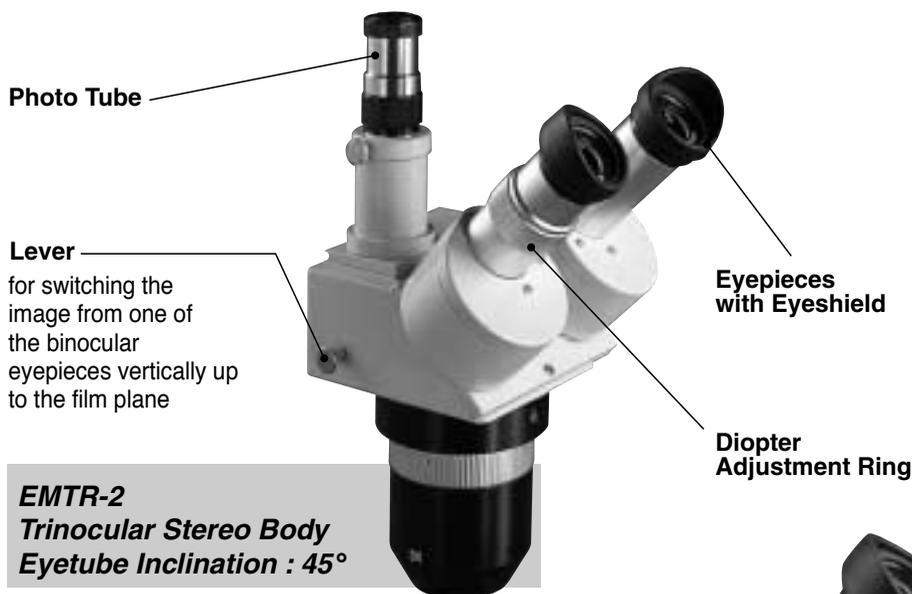
**EMF**  
**EMT**  
**EMTR**  
**EMX**  
**Series**  
**INSTRUCTION**  
**MANUAL**



# NOMENCLATURE AND FUNCTION

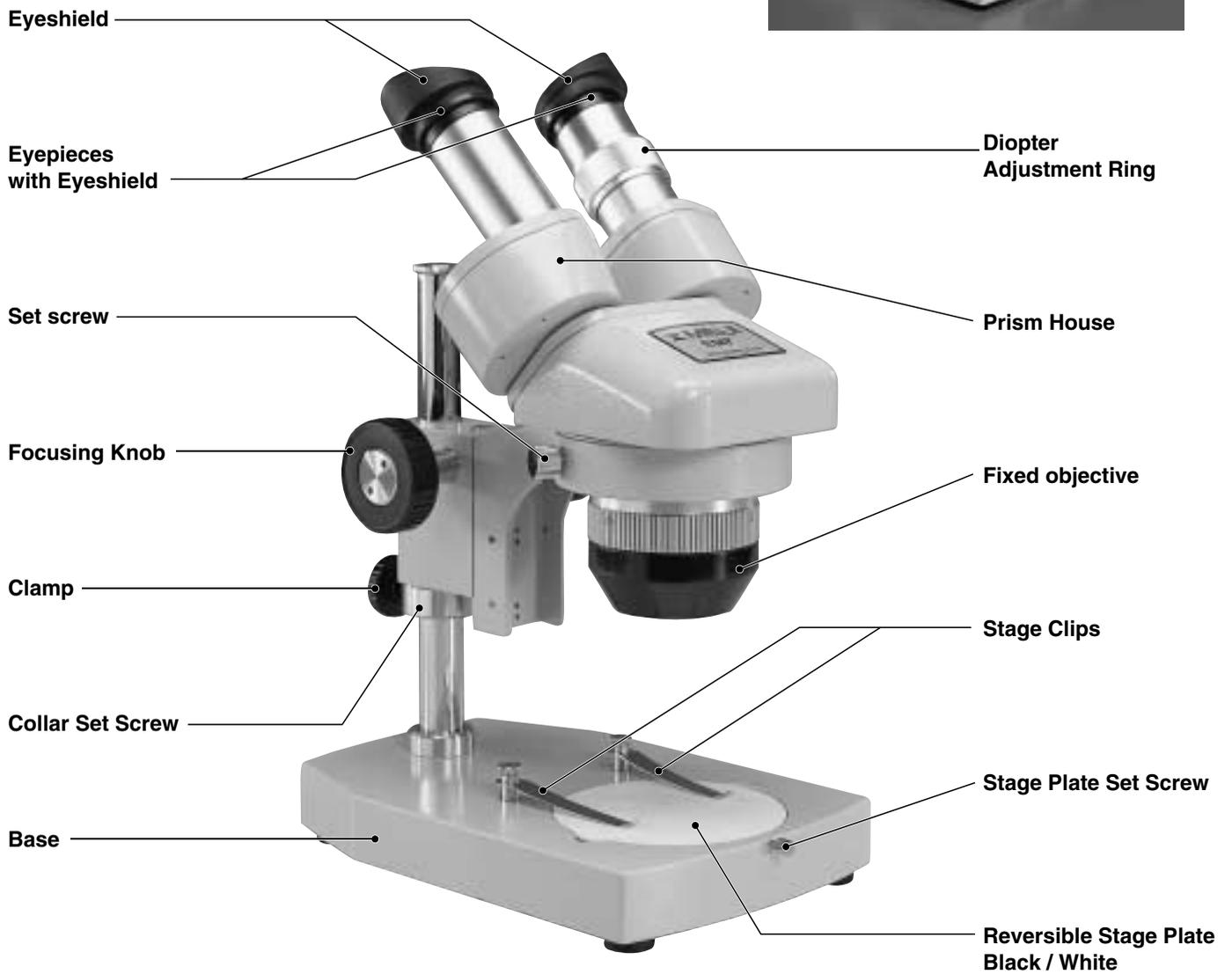
## MEIJI EMF · EMT · EMTR · EMX Series

### STEREO MICROSCOPE



*Model EMT-1 with SWF10X mounted on PBH (PB) Stand*

**Model EMX-1 with SWF10X  
mounted on PX Stand**



**Model EMF-1 with SWF10X  
mounted on P Stand**

# THE USE AND CARE OF MEIJI EM Series "MEIJI" EMF, EMT, EMTR AND EMX SERIES WIDEFIELD STEREO MICROSCOPE

The MEIJI EM Series (EMF, EMT, EMTR and EMX Series) Widefield Stereo Microscope consists of two converging compound microscopes which are combined as a unit to focus simultaneously on the same field of object. Each body tube is fitted with a set of Porro prisms to erect the image and matched achromatic objectives and super widefield eyepieces to furnish a very wide flat field of view. Each eye observes the object from a different perspective, consequently, deep stereoscopic relief is produced in the fused image.

This MEIJI EM Series Stereo Microscope widely is used for various applications such as assembly and inspection of semiconductor devices, and as an indispensable part in bonding machines and microtomes, as well as for educational, clinical and research purposes.

This series stereo microscope is used as follows:

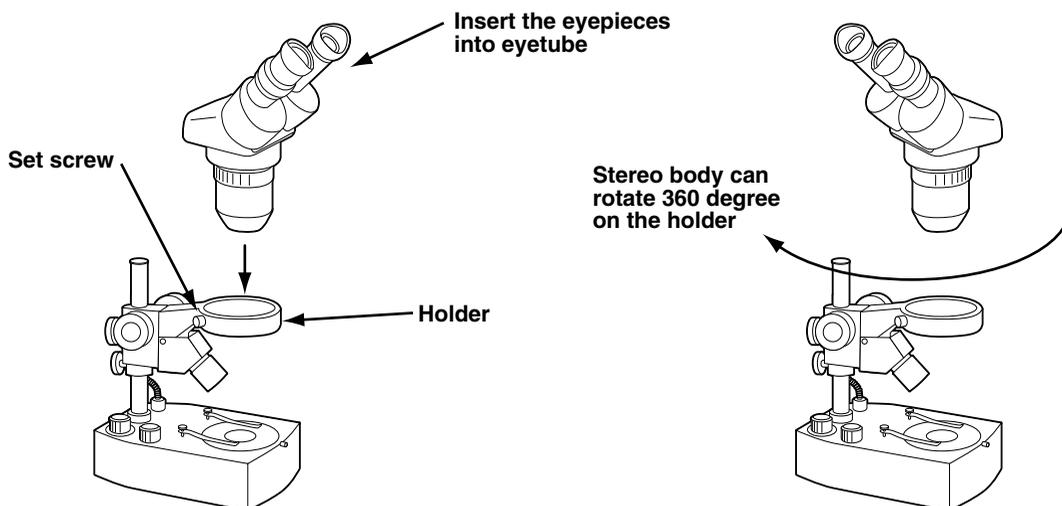
## UNPACKING

This EM series stereo microscope is usually supplied in a styrofoam containers. Remove the instrument from its container by grasping the stereo microscope body and supporting the base with the other hand.

Place the instrument on a firm flat table. (No packing material should be discarded until the instrument has been checked, since some may contain accessory equipment which can not be attached to the instrument.)

When supplied in a wooden cabinet, remove the instrument from the cabinet by unscrewing the two large screws which are used to fasten the instrument to the cabinet through the bottom of the cabinet, with a coin or large screwdriver.

If you ordered zoom stereo body and stand separately, loosen the set screw and insert the body into the holder then tighten the set screw after setting at the desired position.



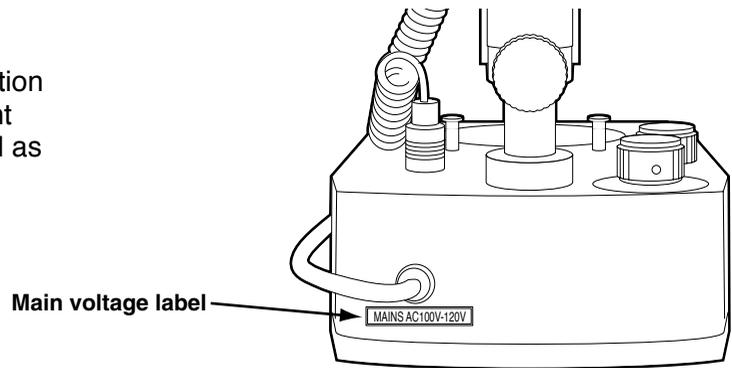
## How to Rotate the Head:

A special feature of this series stereo microscope is the rotation of the stereo microscope body through 360° so that it can be utilized either in the conventional position or with the stage nearest to the observer. To rotate the stereo microscope body, loosen the set screw.



## IMPORTANT!

Before plugging the illuminator into any electric outlet, make sure that transformers and illumination bases supplied to you are suitable to the current available. (When shipped, these will be labelled as to mains voltage and cycles specification.)



## OPERATION PROCEDURES

### HOW TO OPERATE ILLUMINATORS

#### How to use selector switch

□ Focusing stands, PB and AB, are using 6V 1.2A (7W) tungsten filament bulb with suitable transformer built-in base and selector switch on the base.

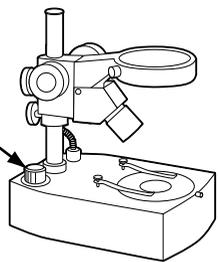
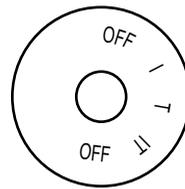
□ Turn the selector switch knob to indicate [ I ] for oblique illumination, to indicate [ T ] for transmitted illumination and [ IT ] for simultaneous illumination by oblique and transmitted lights. The selector switch has OFF position at the both right and left ends.

#### How to use selector switch and dimmer switch

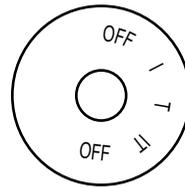
□ Focusing stands, PBH, ABH and ABE, are using 6V 10W Halogen lamps with suitable transformers built-in base and a selector switch and a dimmer switch on the base.

□ Select an illuminator to use, either incident or transmitted, by the selector switch in the way described above. Then, turn the dimmer switch knob slowly to clockwise to turn the dimmer switch ON and to increase brightness. Turn the knob to counterclockwise to decrease the brightness and to turn OFF.

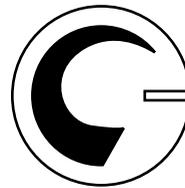
Selector Switch



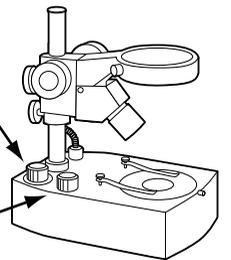
PB Stand



Selector Switch



Dimmer Switch

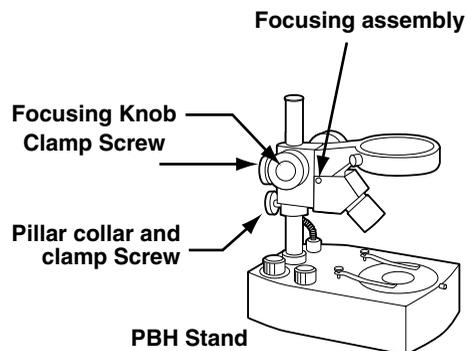


PBH Stand

### FOCUSING CAPABILITY

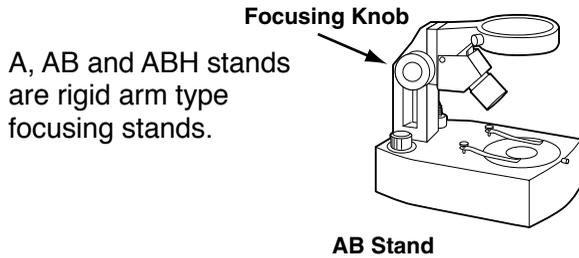
The Pole-type focusing stands have a double focusing capability, i.e. **Rough Focus** (by sliding the whole focus assembly and stereo body up and down on the pillar, fixing the clamp screw when in approximate focus on your specimen), **Precise Focus** (by using the rack and pinion focusing knob).

The focusing stands, P, PL, PX, PC, PB, PBH and BX are the Pole-type.



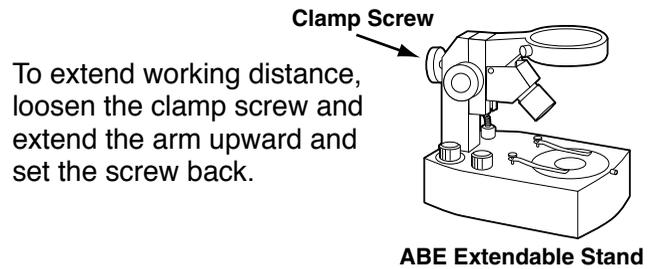
Before moving the whole focus assembly up and down for rough focus, loosen pillar collar once and make sure to reset after the rough focusing is done.

The Rigid arm type focusing stands (except the model ABE) have a focusing capability only by rack and pinion adjustment. This means that the available range of specimen sizes/depths which can be accommodated is somewhat less than in the case of Pole-type stands.



A, AB and ABH stands are rigid arm type focusing stands.

The Rigid arm type ABE focusing stand is with integral focus block and extendable working distance. Provides transmitted and incident halogen illumination.



To extend working distance, loosen the clamp screw and extend the arm upward and set the screw back.

## PRECISE FOCUS ON SPECIMEN

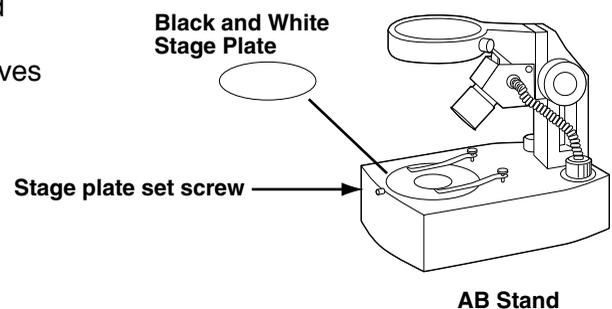
### Stage Plates

You should now decide which of the stage plates supplied will be most suitable.

The focusing stands with plain bases, P, PL, PX, PC and A, are supplied with reversible black and white stage plates. Your selection depends on which side, black or white, gives the best contrast conditions with your selected specimen.

The focusing stands with transmitted illuminators, PB, PBH, AB, ABH and ABE, are supplied with clear glass stage plates and reversible black and white stage plates. If the specimen is semi-transparent, the glass stage plate should be used with transmitted illumination switched on. If the specimen is opaque, use the black/white stage. Your selection depends on which side, black and white, gives the best contrast.

When replacing stage plate loosen the set screw which is visible in front of the stage.



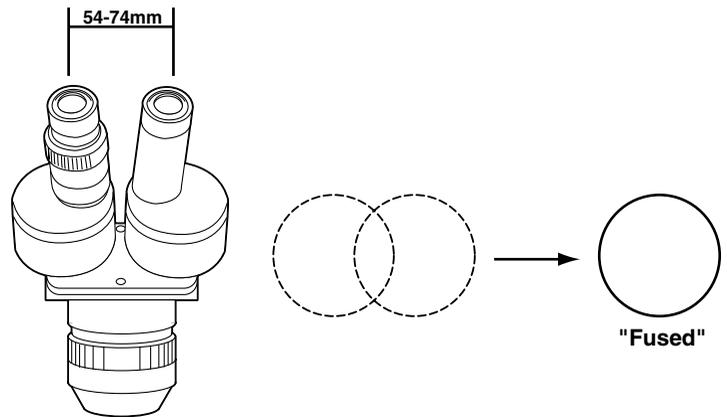
### Focusing Procedure

- (1) Look through the right eyepiece and, using only the right eye, focus on a plain surfaced objective centered on the stage. Adjust the focusing knob until the image is sharp without disturbing the focusing knob.
- (2) Look through the left eyepiece and, using only the left eye, adjust the Eyepiece Adjusting Ring, clockwise or counterclockwise, until the image is in sharp focus.
- (3) Each observer must focus the microscope to his individual requirements. However, a change of specimen requires only a slight readjustment of the focus.

An alternate scheme for focusing may be used. Instead of closing either eye, the left or right side can be blocked off by holding a bit of opaque material below one side or the other of the eyepiece, and the same basic procedure followed as above.

### Interpupillary Distance Adjustment:

The distance between the eyepiece tubes can be adjusted to the proper interpupillary distance of the observer. Take the both sides of Prism Houses in your hands and move inward and outward, looking through the eyepieces, until the both fields are viewed as Fused.

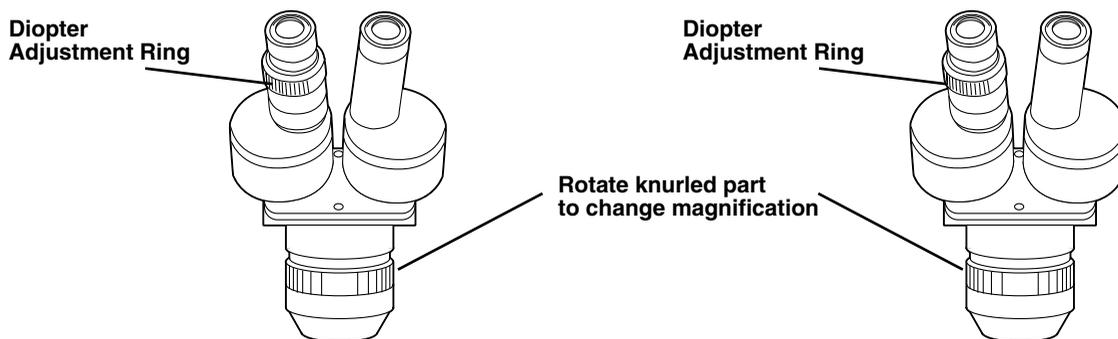


### Changing the Magnification on EMT, EMTR and EMX Models

The EMT, EMTR and EMX models have the paired objectives in a rotatable mount for rapid selection of magnification. To change the magnification, hold the knurled part of the objective cover and rotate clockwise or counterclockwise until it clicks and stop.

### How to Use Eyeshield

Eyeshields which slip over Super Widefield Eyepieces are supplied. These eyeshields exclude stray light and orient the eyes in the proper relationship to the eyepieces.



## PHOTOGRAPHY AND TELEVISION

### PHOTOGRAPHY

Photographic documentation of microscope visual images is most conveniently achieved by using the trinocular (photo-binocular) bodies offered for use with MEIJI TECHNO microscopes.

In the case of the EMTR Stereo series a trinocular is supplied with lever-switching of the image from one of the binocular eyepieces vertically up to the film plane of a 35mm SLR camera with adaptor mounted on the vertical photo tube. Visual observation can be simultaneously carried out, using the other eyepiece.

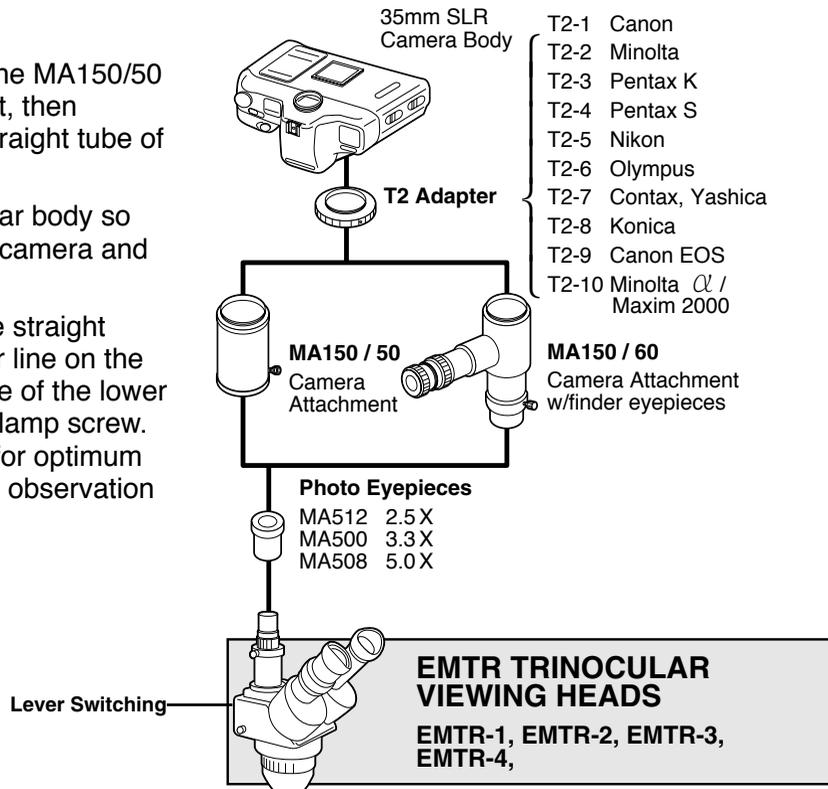
In this system the MA150/50 and MA150/60 Camera Attachment should be used with the SLR camera model of your choice. Please note that one of the large range of T2 Adaptor Rings suiting to your camera should have been ordered and supplied.

These adaptor rings are intended to compensate for the small differences in effective distance of the film plane in your camera - so as to ensure that photographs are optimally sharp, and achieved without wastage of film in trial shots and experimentation.

In addition special low-power camera eyepieces (2.5X, 3.3X and 5X) are available and recommended - these will give you maximum field coverage on your specimen while using the convenient and economical 35mm film format

## CAMERA OPERATION

- (1) Fix your 35mm SLR camera on the MA150/50 or MA150/60 Camera Attachment, then mounting this assembly on the straight tube of the trinocular body.
- (2) Pull out the lever on your trinocular body so as to send the image both to the camera and the visual eyepiece.
- (3) Rotate the adjustment ring on the straight tube so as to set the red indicator line on the upper tube portion at the top edge of the lower tube. Then fix in place with the clamp screw. You now should be set correctly for optimum conditions of simultaneous visual observation and photography.

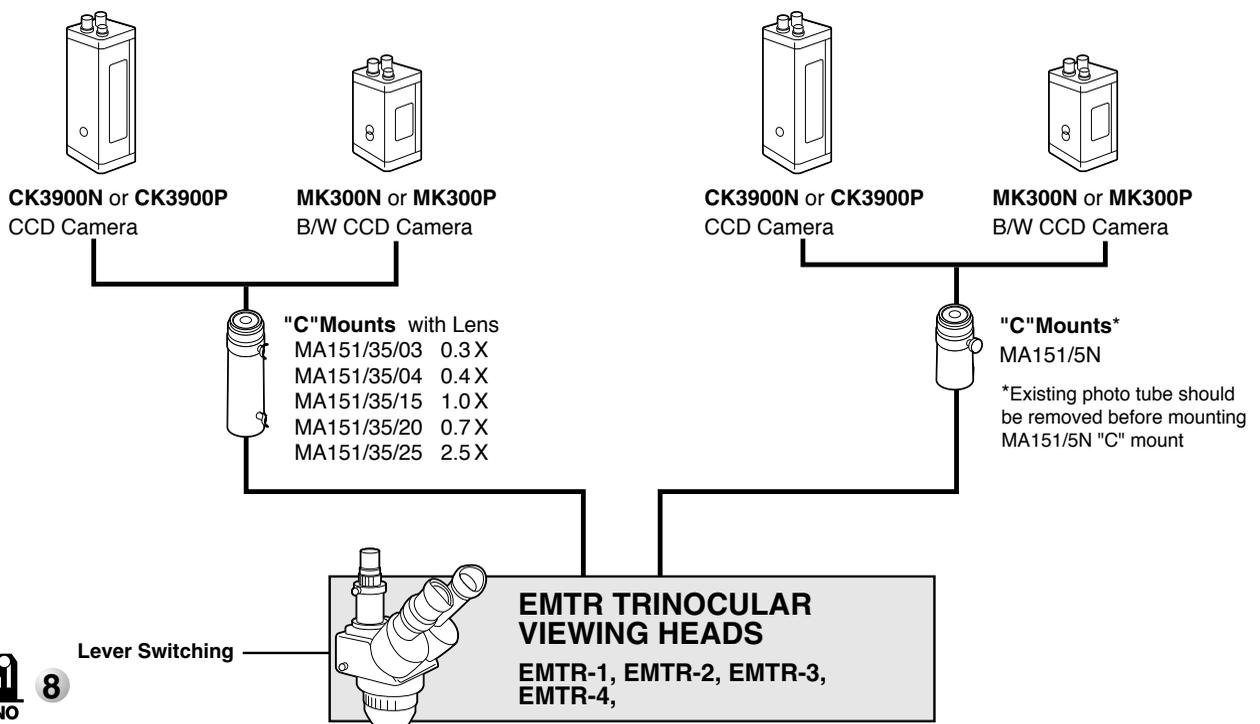


## TELEVISION

For television the MA 151/5N "C" Mount Adaptor should be used, threaded into your TV camera, then placed and adjusted on the upper portion of your trinocular body.

Adjustment can then proceed a per paragraph (3) above. You should understand that the comparatively large magnification factors inherent in most TV camera/monitor systems will restrict your fields of view (while blowing up total magnification).

A correct optical set-up and adjustment is, of course, crucial to obtaining a good TV monitor image, but keep in mind that the monitor controls for brightness and contrast adjustment are also important and should also be experimented with in order to obtain the best monitor image.



# MAINTENANCE AND CARE

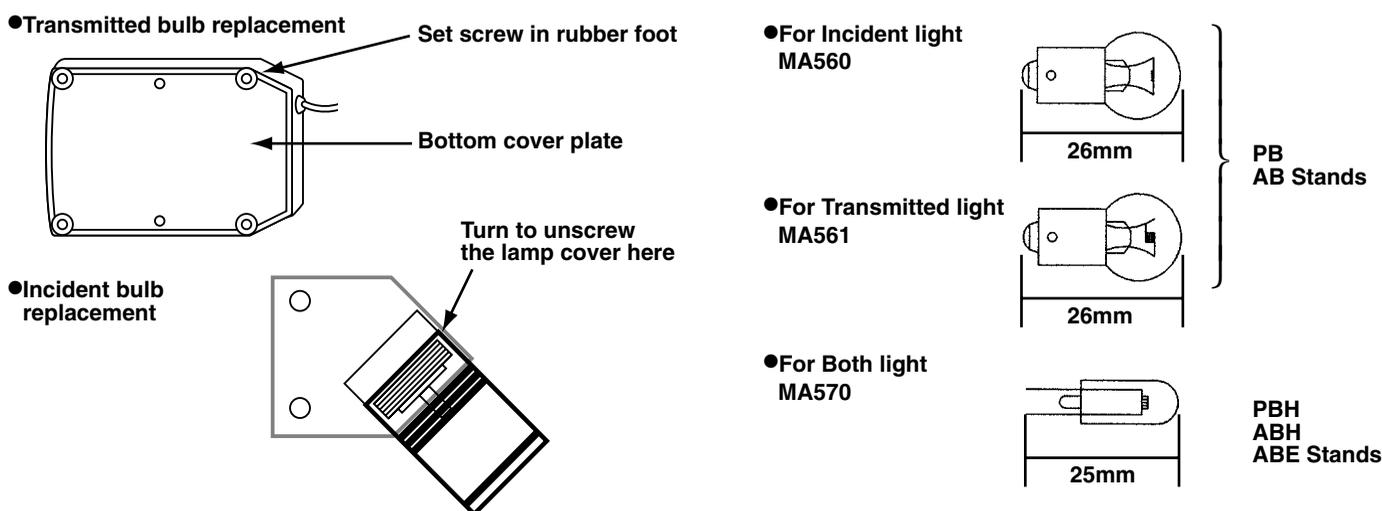
## BULB REPLACEMENT

When changing light bulbs in the illuminators, always disconnect the plug from the electrical source. Never work on the electrical system without first disconnecting.

When a bulb replacement is necessary in the Incident Illuminator, remove the lamp cover by turning it counterclockwise and remove the old bulb by twisting it 1/3 turn counterclockwise by pushing it toward the socket so that the bulb will be sprung out from its socket.

To replace the bulb of the Transmitted Illuminator, lay the instrument carefully over on its side and remove the four set screws in the bottom cover of the base. Replace the old bulb in the same way as above.

The bulbs used for the Incident and Transmitted Illuminators of PB/AB stand are different. The bulb for the Incident Illuminator employs a flat filament facing to the head of the bulb and Catalog Number is MA560 and the bulb for the Transmitted Illuminator employs a flat filament facing to the side of the lamp and the Catalog Number is MA561. The bulbs used for the Incident and Transmitted Illuminators of PBH/ABH/ABE stand are same halogen. Catalog number is MA570.



## CARE

Always cover the instrument with the plastic dust cover provided when the microscope is not in use. Keep the eyepieces in the microscope body at all times in order to prevent dust from falling on the internal optics.

Store the microscope in a safe, clean place when not in use for an extended period of time.

## CLEANING

Clean exposed lens surfaces carefully with a pressurized air source, soft brush or clean soft cloth.

Too much finger pressure may damage lens coatings.

To remove oil fingerprints and grease smudges, moisten the cleaning cloth with a very small amount of alcohol or xylene.

Painted or plastic surfaces should be cleaned only with a cloth moistened with water and a small amount of detergent.

## DO NOT ATTEMPT TO MAKE ADJUSTMENTS TO THE INTERNAL OPTICS OR MECHANICS!!

If the microscope does not seem to be functioning properly or you have questions about its operation, call your supplier (or an authorized repair service) for advice.

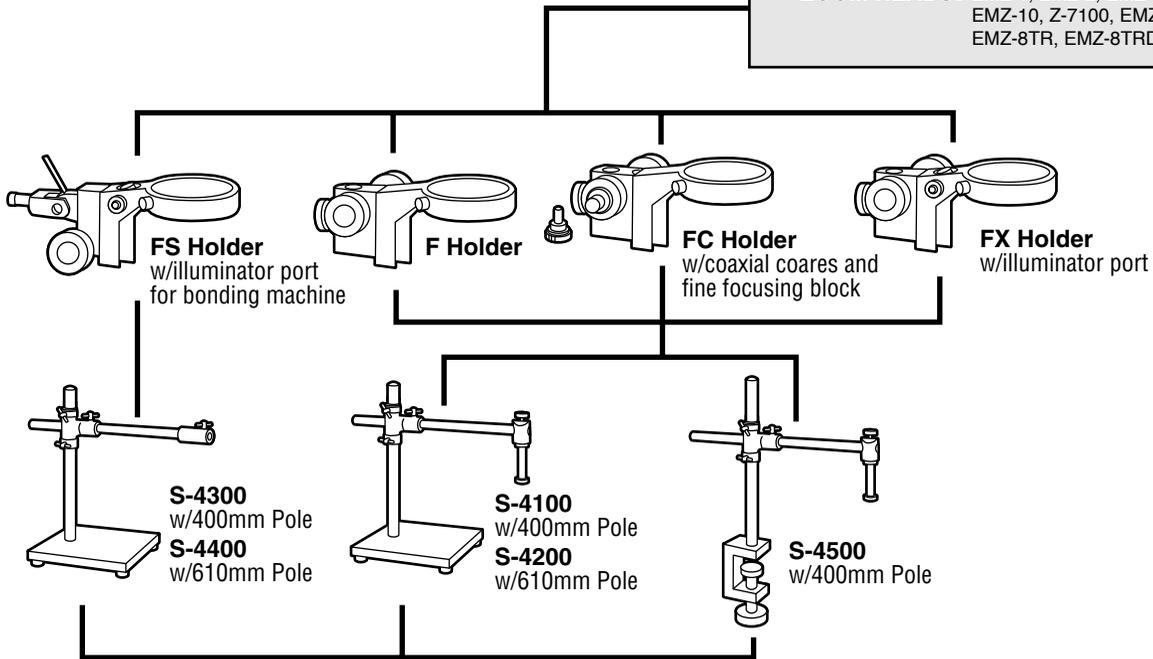
# EM Series SYSTEM DIAGRAM

## SPECIAL STANDS

### EM Series VIEWING HEADS

EMF-1, EMF-2,  
EMT-1, EMT-2, EMT-3, EMT-4,  
EMTR-1, EMTR-2, EMTR-3, EMTR-4,

※ZOOM HEADS: EMZ-1, EMZ-2, EMZ-5, EMZ-5D, EMZ-6, EMZ-9,  
EMZ-10, Z-7100, EMZ-2TR, EMZ-5TR, EMZ-5TRD,  
EMZ-8TR, EMZ-8TRD



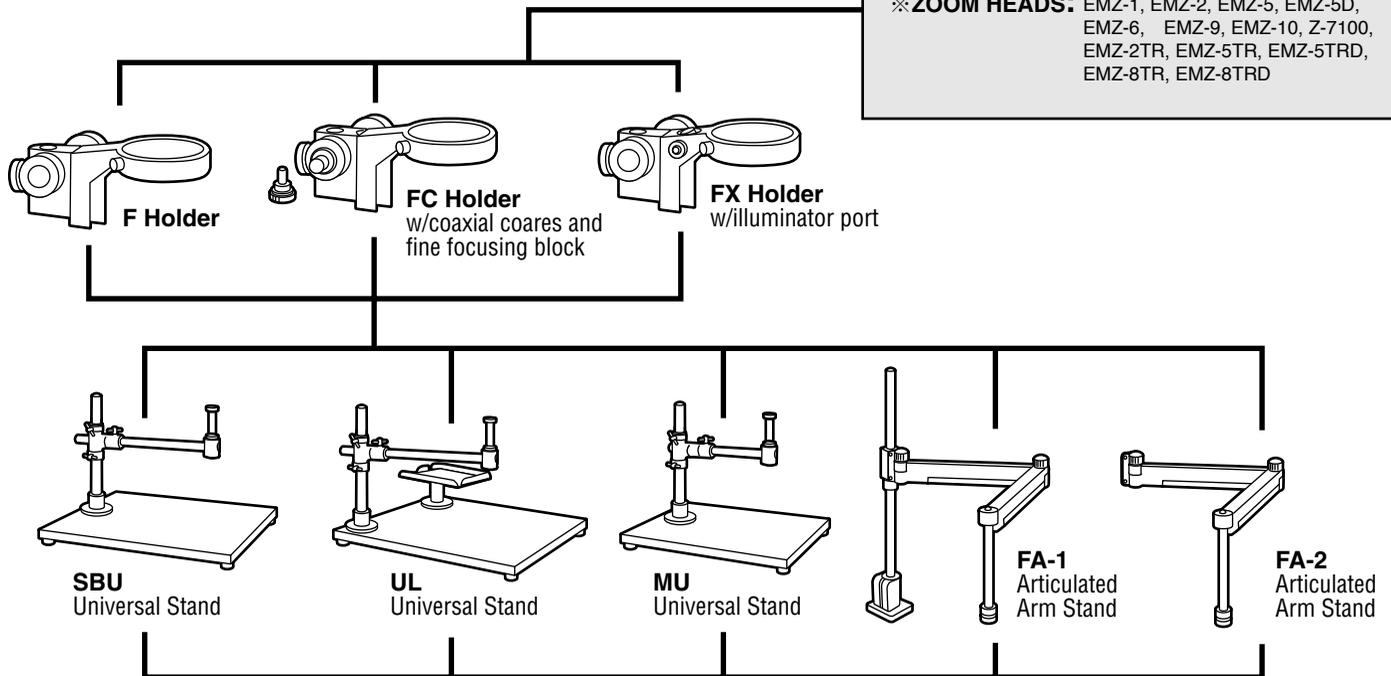
**MA574**  
Large Sliding  
Stage

**MA575**  
Medium Sliding  
Stage

### EM Series VIEWING HEADS

EMF-1, EMF-2,  
EMT-1, EMT-2, EMT-3, EMT-4,  
EMTR-1, EMTR-2, EMTR-3, EMTR-4,

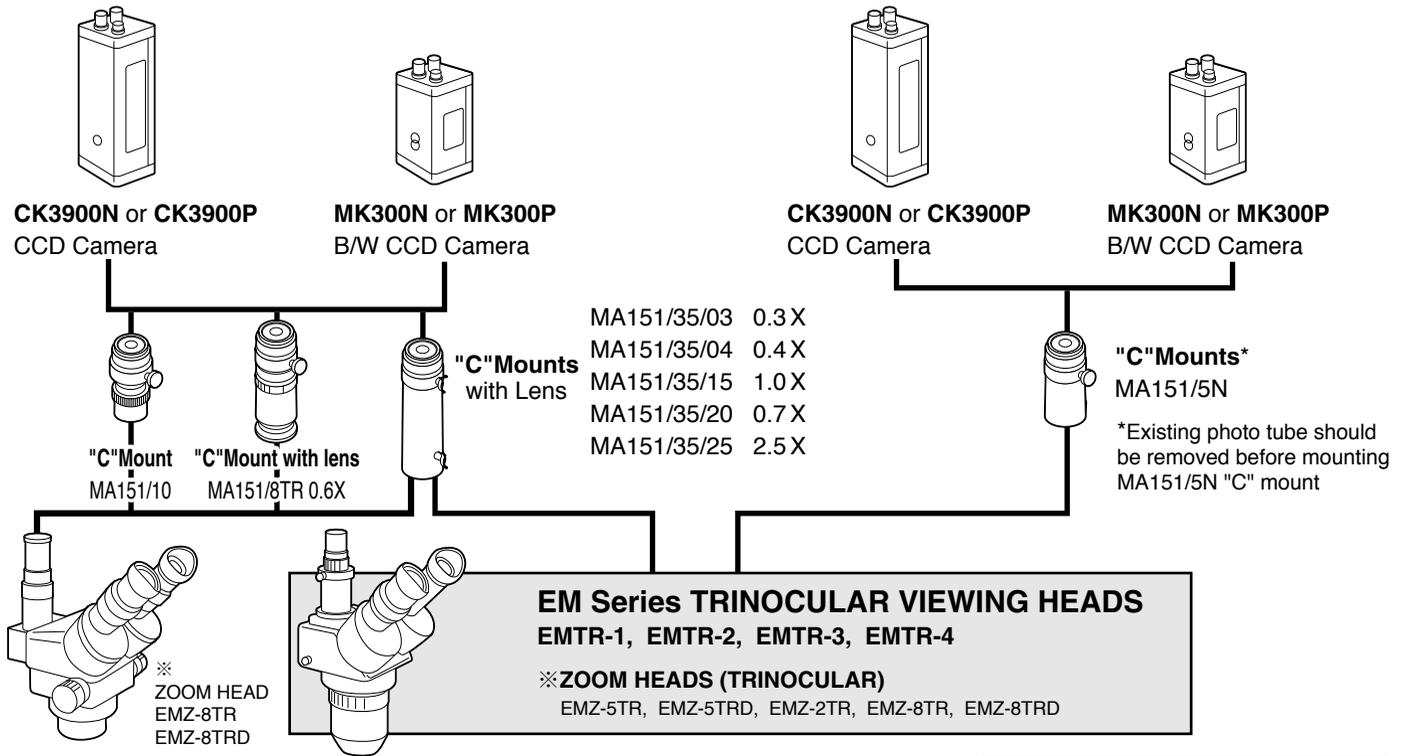
※ZOOM HEADS: EMZ-1, EMZ-2, EMZ-5, EMZ-5D,  
EMZ-6, EMZ-9, EMZ-10, Z-7100,  
EMZ-2TR, EMZ-5TR, EMZ-5TRD,  
EMZ-8TR, EMZ-8TRD



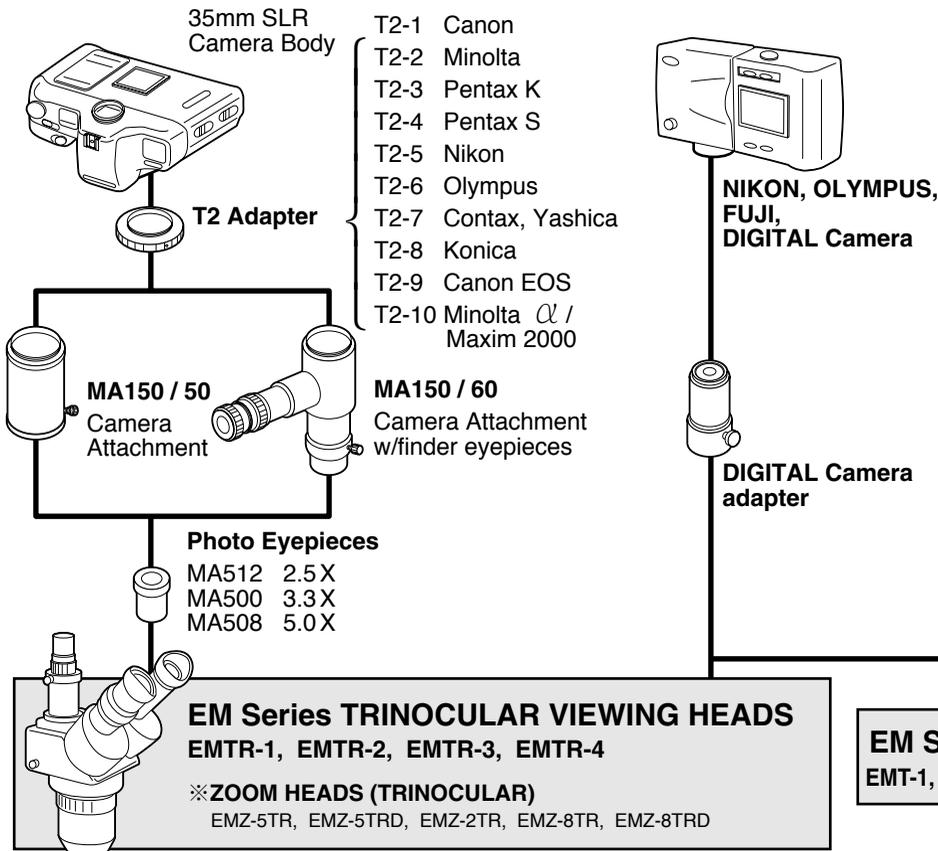
**MA574**  
Large Sliding  
Stage

**MA575**  
Medium Sliding  
Stage

# EM Series SYSTEM DIAGRAM VIDEO MICROSCOPY



# EM Series SYSTEM DIAGRAM PHOTO MICROSCOPY

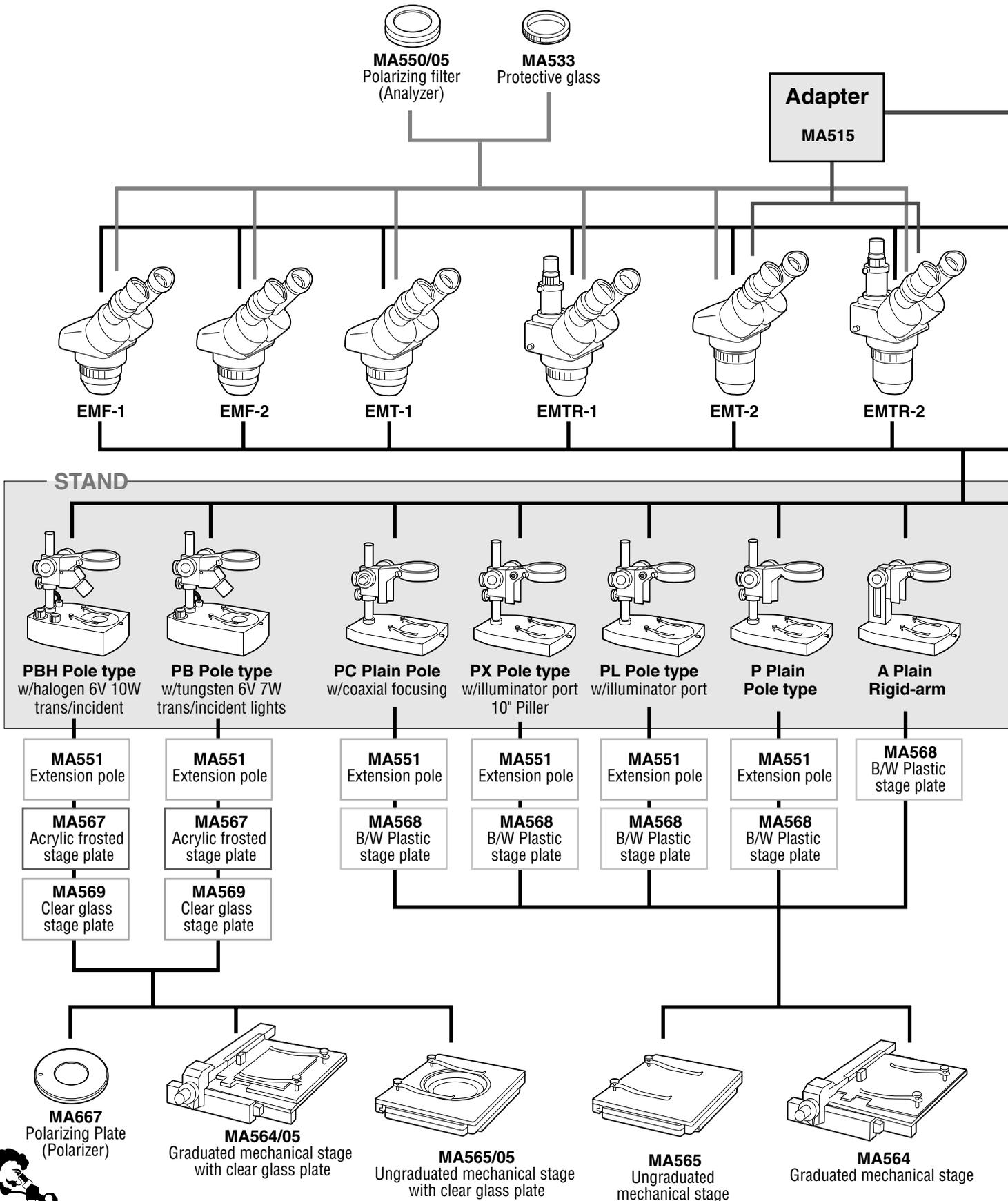


DIGITAL CAMERAS	MICROSCOPES	
	Fits a 23.2mm I.D./25.2mm O.D. Eye tube or Photo tube of:	Fits a 30.5mm I.D./34.0mm O.D. Eye tube of:
	EMTR-1, EMTR-2, EMTR-3, EMTR-4	EMF-1, EMF-2, EMT-1, EMT-2, EMT-3, EMT-4
	<b>ZOOM HEADS:</b> EMZ-2TR, EMZ-5TR, EMZ-5TRD, EMZ-8TR, EMZ-8TRD, EMZ-12TR, EMZ-12TRD	<b>ZOOM HEADS:</b> EMZ-1, EMZ-2, EMZ-5, EMZ-6, EMZ-9, EMZ-10, EMZ-12, Z-7000
<b>NIKON Coolpix 950 990 995</b>	<b>MA151/45/50</b>	<b>MA151/30/50</b>
<b>NIKON Coolpix 5000</b>	<b>MA151/45/70</b>	<b>MA151/30/70</b>
<b>Olympus Camedia C-3040 Zoom C-4040 Zoom C-3100</b>	<b>MA151/45/60</b>	<b>MA151/30/60</b>
<b>Fuji Finepix S602 4900Z 6900Z</b>	<b>MA151/45/80</b>	<b>MA151/30/80</b>

**EM Series BINOCULAR HEADS**  
EMT-1, EMT-2, EMT-3, EMT-4, EMF-1, EMF-2

# EM Series SYSTEM DIAGRAM

## EMF · EMT · EMTR · EMX Series



## EYEPIECES, Paired

**MA501**  
SWF5X

**MA502**  
SWF10X

**MA520**  
SWF12.5X

**MA503**  
SWF15X

**MA535**  
HSWF15X

**MA504**  
SWF20X

**MA521**  
SWF30X

**MA519\***  
SWF10X-F  
\*(Piece)

**MA600**  
EYESHIELD

## Auxiliary lenses

**MA518**  
0.5X

**MA527**  
0.75X

**MA513**  
1.5X

**MA514**  
2.0X

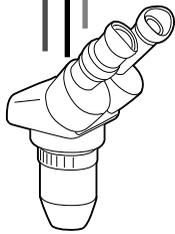
  
**MA550/10**  
Polarizing filter  
(Analyzer)

  
**MA537**  
Protective glass

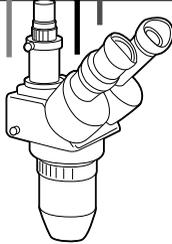
## Auxiliary lens

  
**MA658**  
Protective glass

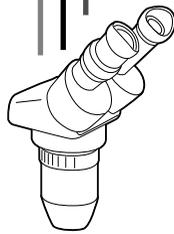
  
**MA652**  
0.7X



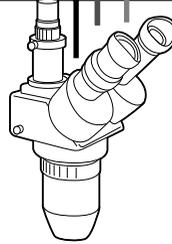
**EMT-3**



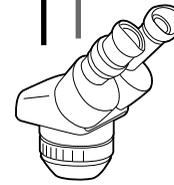
**EMTR-3**



**EMT-4**

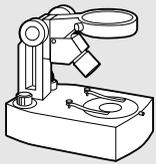


**EMTR-4**

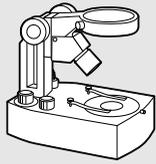


**EMX\***

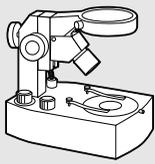
\*Need to use PX stand  
or Pole type stand with  
MA551 Extension pole.



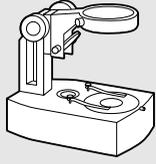
**AB Rigid-arm**  
w/tungsten 6V 7W  
trans/incident lights



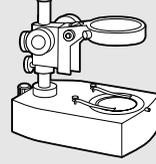
**ABH Rigid-arm**  
w/halogen 6V 10W  
trans/incident lights



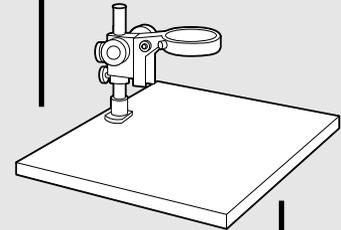
**ABE Extendable**  
w/halogen 6V 10W  
trans/incident lights



**B mirror Stand**  
115V 20W



**BX Stand**  
w/mirror for B/D  
(light not included)



**KBL Pole type**  
w/illuminator port  
on flat base

**MA551**  
Extension pole

**MA567**  
Acrylic frosted  
stage plate

**MA567**  
Acrylic frosted  
stage plate

**MA567**  
Acrylic frosted  
stage plate

**MA551**  
Extension pole

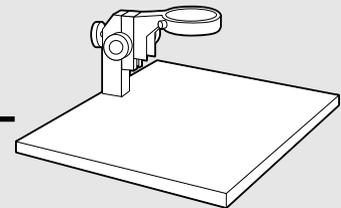
**MA569**  
Clear glass  
stage plate

**MA569**  
Clear glass  
stage plate

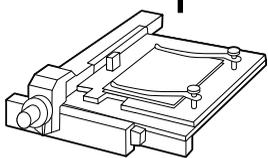
**MA569**  
Clear glass  
stage plate

**MA567**  
Acrylic frosted  
stage plate

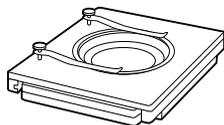
**MA569**  
Clear glass  
stage plate



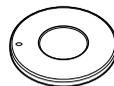
**KBE Rigid-extendable**  
arm on flat base



**MA564/05**  
Graduated mechanical stage  
with clear glass plate



**MA565/05**  
Ungraduated mechanical stage  
with clear glass plate



**MA667**  
Polarizing Plate  
(Polarizer)



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